

# Andrew J. Lail

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## EDUCATION

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| <b>University of Wisconsin-Madison, Madison, WI, USA</b><br><i>Master of Science in Pharmaceutical Sciences (under Dr. Jason Kwan)</i>   | August 2020-April 2023             |
| <b>Georgia Institute of Technology, Atlanta, GA, USA</b><br><i>Bachelor of Science in Biochemistry, Minor in Biology (Research Option)</i><br>Study Abroad at Victoria University of Wellington, New Zealand | Graduated May 2019<br>Jul-Nov 2016 |

## RESEARCH EXPERIENCE

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| <b>AIDS Vaccine Research Laboratory, University of Wisconsin-Madison</b><br><i>Research Specialist - Principle Investigator: Dr. David O'Connor</i><br>Completed library preparation and sequencing for SARS-CoV-2 genomic surveillance projects<br>Drove assay development and analysis for air metagenomics initiative<br>Mentored undergraduate researchers towards group objectives and their development as scientists<br>Led the lab's outbreak response to dairy cattle influenza | February 2024-Present  |
| <b>School of Pharmacy, University of Wisconsin-Madison</b><br><i>Graduate student – Mentor: Dr. Jason Kwan</i><br>Investigated natural product producing microbial symbionts using bioinformatic tools<br>Optimized a novel RNA extraction protocol for an environmental microbe<br>Wrote and defended a research thesis   | August 2020-April 2023 |
| <b>Institute of Agriculture, University of Tennessee</b><br><i>Research Technician III - Principal Investigator: Dr. Neal Stewart</i><br>Automated manual protocols using a high throughput liquid handling robot<br>Assembled genetic constructs for chloroplast engineering  | May 2019-June 2020     |
| <b>School of Chemistry and Biochemistry, Georgia Institute of Technology</b><br><i>Undergraduate Researcher - Mentor: Dr. Vinayak Agarwal</i><br>Investigated specificity of carrier proteins and halogenases in halogenated pyrrole natural product biosynthesis  | August 2017-May 2019   |

## PUBLICATIONS

- Lail, A. J.**; Vuyk, W. C.; Machkovech, H.; Minor, N. R.; Hassan, N. R.; Dalvie, R.; Emmen, I. E.; Wolf, S.; Kalweit, A.; Wilson, N.; Newman, C. M.; Tiburcio, P. B.; Weiler, A.; Friedrich, T. C.; O'Connor, D. H. Amplicon Sequencing of Pasteurized Retail Dairy Enables Genomic Surveillance of H5N1 Avian Influenza Virus in United States Cattle. *PLOS ONE* **2025**, 20 (6), e0325203. <https://doi.org/10.1371/journal.pone.0325203>.
- Vuyk, W.; Bobholz, M.; Emmen, I.; **Lail, A.**; Minor, N.; Bhimalli, P.; Eickhoff, J. C.; Ries, H. J.; Machkovech, H.; Wei, W.; Weiler, A.; Richardson, A.; DePagter, C.; VanSleet, G.; Bhasin, M.; Kamal, S.; Wolf, S.; Virdi, A.; Bradley, T.; Gifford, A.; Benito, M.; Shipe, A.; Mohamed, R.; Smith, J.; Wilson, N.; Friedrich, T. C.; O'Connor, D. H.; Garonzik-Wang, J. Longitudinal Assessment of Solid Organ Transplant Recipients With SARS-CoV-2 Infection. *Transplantation Proceedings* **2025**, 57 (5), 922–930. <https://doi.org/10.1016/j.transproceed.2025.04.004>.
- Emmen, I. E.; Vuyk, W. C.; **Lail, A. J.**; Wolf, S.; O'Connor, E. J.; Dalvie, R.; Bhasin, M.; Virdi, A.; White, C.; Hassan, N. R.; Richardson, A.; VanSleet, G.; Weiler, A.; Rounds-Dunn, S.; Horn, K. V.; Gartler, M.; Jorgenson, J.; Spelman, M.; Ottosen, S.; Minor, N. R.; Wilson, N.; Friedrich, T. C.; O'Connor, D. H. SARS-CoV-2 Genomic Surveillance from Community-Distributed Rapid Antigen Tests, Wisconsin, USA - Volume 31, Supplement—April 2025 - Emerging Infectious Diseases Journal - CDC. **2025**. <https://doi.org/10.3201/eid3113.241192>.

Rees, E. R.; Uppal, S.; Clark, C. M.; **Lail, A. J.**; Waterworth, S. C.; Roesemann, S. D.; Wolf, K. A.; Kwan, J. C. Autometa 2: A Versatile Tool for Recovering Genomes from Highly-Complex Metagenomic Communities. *bioRxiv* September 5, 2023, p 2023.09.01.555939. <https://doi.org/10.1101/2023.09.01.555939>.

Occhialini, A.; Pfotenhauer, A. C.; Li, L.; Harbison, S. A.; **Lail, A. J.**; Burris, J. N.; Piasecki, C.; Piatek, A. A.; Daniell, H.; Stewart Jr, C. N.; Lenaghan, S. C. Mini-Synplastomes for Plastid Genetic Engineering. *Plant Biotechnology Journal* **2022**, *20* (2), 360–373. <https://doi.org/10.1111/pbi.13717>.

Occhialini, A.; Pfotenhauer, A. C.; Frazier, T. P.; Li, L.; Harbison, S. A.; **Lail, A. J.**; Mebane, Z.; Piatek, A. A.; Rigoulot, S. B.; Daniell, H.; Stewart, C. N.; Lenaghan, S. C. Generation, Analysis, and Transformation of Macro-Chloroplast Potato (*Solanum Tuberosum*) Lines for Chloroplast Biotechnology. *Scientific Reports* **2020**, *10* (1), 21144. <https://doi.org/10.1038/s41598-020-78237-x>.

Thapa, H. R.; **Lail, A. J.**; Garg, N.; Agarwal, V. Chemoenzymatic Synthesis of Starting Materials and Characterization of Halogenases Requiring Acyl Carrier Protein-Tethered Substrates. *Methods Enzymol* **2018**, *604*, 333–366. <https://doi.org/10.1016/bs.mie.2018.01.028>.

## **PRESENTATIONS**

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**Andrew J. Lail** et al. “*Longitudinal sequencing of long SARS-CoV-2 infection reveals viral change over time.*” 13th Annual Wisc-e-sota Virology Symposium. 26 September 2025. Poster.

**Andrew J. Lail**. “*Pasteurized retail dairy enables genomic surveillance of H5N1 avian influenza virus in United States cattle.*” International Plant and Animal Genome Conference. 14 January 2025. **Talk**.

**Andrew J. Lail** et al. “*Sequencing pasteurized retail dairy RNA enables genomic surveillance on H5N1 avian influenza outbreak in cattle.*” 12th Annual Wisc-e-sota Virology Symposium. 27 September 2024. Poster.

**Andrew J. Lail**. “*Retail dairy sampling for HPAI H5N1.*” CDC SPHERES Meeting. 18 July 2024. **Talk**.

**Andrew J. Lail**. “*Halogenase and carrier protein specificity in biosynthesis of halogenated pyrroles.*” Georgia Tech Undergraduate Research Symposium. 9 April 2019. **Talk**.

**Andrew J. Lail**. “*Crystallization of an Enzyme Involved in Polybrominated Aromatic Compounds*” Georgia Tech Undergraduate Research Symposium. 17 April 2018. Poster.

## **AWARDS AND HONORS**

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| Wisconsin Distinguished Graduate Fellowship | 2020-21   |
| Pharmaceutical Sciences Graduate Scholar    | 2020      |
| President's Undergraduate Research Award    | Fall 2018 |
| Zell Miller Scholarship                     | 2015-2019 |

## **TECHNICAL SKILLS**

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### ***Wet Lab***

Oxford Nanopore sequencing  
Illumina sequencing  
DNA/RNA Extraction  
DNA/RNA Sequencing  
Chromatography  
SDS-PAGE  
Bacterial Transformation  
PCR  
DNA Gel Electrophoresis  
Mini/MidiPrep

Plant genotyping  
Southern Blot  
LC-MS  
MALDI-TOF MS  
Protein Mass Spec  
Fluorescence microscopy  
***Computational***  
Bash  
Python  
Pandas  
Conda

Nextflow  
Geneious  
Microsoft Office (Word and Excel)  
Adobe Indesign  
Adobe Illustrator  
ChemDraw  
Cluster computing  
Phylogenetic trees  
Variant analysis  
BV-BRC tools